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FOR

**PLUG FOR BEVERAGE LIDS**

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## PLUG FOR BEVERAGE LIDS

### Field

[0001] Beverage lid plugs

### Background

[0002] Beverages, particularly transportable and/or disposable hot beverages (e.g., coffee, tea, hot chocolate, etc.), are generally packaged in cups having a detachable lid (e.g., a plastic lid). The cups generally come in a variety of sizes (small (eight to 10 ounces (oz.)), medium (12 oz.) and large (16 oz. or greater). Thus, lids also come in a variety of sizes and each lid has its own shape and sized opening from which a person may consume the beverage.

[0003] Typically, a transportable and/or disposable beverage container is a paper or foamed polymer cup having a generally conical shape. Rigid or hard polymer materials are also used as transportable beverage containers that are generally intended to be reusable. A typical lid is generally a hard plastic material having a base including a radius suitable to surround and fit snugly on a lip of the container. Alternatively, particularly in the case of rigid polymer material beverage containers, a typical lid may have a radius to fit within a superior radius of a conical-shaped container. A typical lid has a superior surface (generally cylindrical) having an opening through a body of the lid and through which the contents of the beverage container may be consumed. Representatively, a consuming opening may have a generally elliptical (e.g., oval) shape with a major axis on the order of 0.3 inches to 0.5 inches.

[0004] A superior surface of a lid may also include a second opening separate from a consuming opening. The second opening is, for example, suitable to allow air into the beverage container (for example, while the beverage is being consumed) and may be as small as a pin hole or similar sized opening. With this in mind, the second opening is almost always smaller than the consuming opening, and is usually considerably smaller than the consuming opening.

[0005] Many times while transporting (e.g., walking, driving, etc.) the cup (container and lid) containing the beverage moves in a manner which

causes its contents to spill through the consuming opening in the lid. This situation causes consumers a great deal of discomfort and aggravation.

### **BRIEF DESCRIPTION OF THE DRAWINGS**

[0006] Various embodiments are illustrated by way of example and not by way of limitation in the figures of the accompanying drawings in which like references indicate similar elements.

[0007] **Figure 1** shows a bottom view of one embodiment of an apparatus suitable for blocking (e.g., sealing) an opening in a lid of a beverage container.

[0008] **Figure 2** shows a side view of the apparatus shown in **Figure 1**.

[0009] **Figure 3** shows a projection view of the apparatus shown in **Figure 1**.

[0010] **Figure 4** shows the apparatus shown in **Figure 1** filling the opening in the lid of a cup during storage and use.

[0011] **Figure 5** shows a plurality of stackable lids including another embodiment of an apparatus for blocking (e.g., sealing) an opening in a lid of a beverage container.

[0012] **Figure 6** the apparatus shown in **Figure 1** attached to a key chain.

[0013] **Figure 7** shows another embodiment of the apparatus shown in **Figure 1** attached to a key chain.

### **DETAILED DESCRIPTION**

[0014] **Figure 1** shows a bottom view of one embodiment of an apparatus suitable for blocking (e.g., sealing) an opening in a lid of a beverage container. **Figure 2** shows a side view of apparatus 100. In one embodiment, apparatus 100 includes base 110. Base 110 in the embodiment shown in **Figure 1** and **Figure 2** is an elliptical piece of material. In other embodiments, base 110 may be any shape (e.g., rectangular, including a square, circular, triangular, etc.).

[0015] Base 110, in the embodiment shown in **Figure 1** and **Figure 2**, has a longitudinal length,  $L$ , approximately equivalent to a diameter of a lid of a transportable beverage container. Where a lid is attached to a lip of a beverage container and a top surface of the lid defines a top surface of a collective cup (container and lid), base 110 may have a length greater than or less than a diameter of a lid. Where a lid fits within a superior radius of a container, for example, base 110 may have a diameter less than a diameter of a lid. Representatively, in one embodiment, base 110 has a length on the order of about two inches. Other embodiments of base 110 have a length in the range of about one half inch to about four inches. In addition, base 110 may be shorter than one half inch and longer than four inches in other embodiments.

[0016] Base 110, in one embodiment has a lateral width,  $W$ , sufficient, at least at one portion, to accommodate a protrusion having dimensions suitable to fit within a consuming opening of a lid. A suitable lateral width may be constant or fluctuate along a longitudinal length,  $L$ . Representatively, in one embodiment, base 110 has a lateral width,  $W$ , of about one inch. In other embodiments, base 110 has a width in the range of about one half inch to about two inches. It is contemplated that base 110 has any width capable of containing a protrusion sufficient to block (e.g., plug) an opening in the lid of a beverage container.

[0017] In one embodiment, base 110 is formed of plastic. Other suitable materials include, but are not limited to, paper, cardstock or cardboard. Base 110 has a sufficient rigidity to render it suitable to be placed on a lid of a beverage container and to be retained on the lid without an application of an external force. In one embodiment, a sufficient rigidity is defined, in part, by a thickness,  $T$ , of a material for base 110. Representatively, a suitable thickness,  $T$ , is on the order of 0.25 inches. Other thickness, perhaps much greater than 0.25 inches are also suitable. Collectively, the dimensions (e.g., 0.0625 inches or greater) of base 110 are such that, in one embodiment, it is grippable by a consumer of a beverage container and may be gripped by, for example, two fingers and placed on or removed from a lid of a beverage container.

[0018] In one embodiment, apparatus 100 includes protrusion 120 extending from a surface of base 110. Protrusion 120, in one embodiment has

dimensions (e.g., a length, l, and a width, w) suitable to fit within at least a portion of a consuming opening of a lid. Representatively, protrusion 120 has a dimension that is approximately the same as or less than a dimension of a consuming opening (e.g., a length, l, and a width, w, that is equal to or less than a length and a width of a consuming opening).

[0019] In one embodiment, protrusion 120 has a thickness, t, suitable to extend from a surface of apparatus 100 into a consuming opening of a beverage container lid when apparatus is placed on or rests on the lid. Protrusion 120 may have a thickness, t, equivalent to a thickness of a lid or much less (e.g., just enough to extend into the opening).

[0020] Protrusion 120, in one embodiment, has a thickness, t, sufficient so that when base 110 lies on a surface of a lid of a beverage container, protrusion 120 protrudes or extends a distance from a surface of the lid sufficient to protrude or extend into a consuming opening in a lid of a beverage container to block (e.g., plug) the opening. In one embodiment, a suitable protrusion distance or thickness, t, is about one eighth inch. In other embodiments, protrusion 120 has a thickness, t, in the range of about one sixteenth inch to about one half inch. In addition, protrusion 120 may be any thickness, t, that is sufficient to adequately fill an opening in the lid of a beverage container.

[0021] As shown in **Figure 2**, protrusion 120 extends, in one embodiment, in a substantially perpendicular direction with respect to side 210 of base 110. In other embodiments, protrusion 120 may form other angles with respect to side 210.

[0022] Protrusion 120, in one embodiment, is formed of a deformable material. Representatively, if protrusion 120 is larger or has a different shape than an opening in a lid of a beverage container, the deformable material is capable of contracting to a size and shape to allow protrusion 120 to fit snugly within the opening. In one embodiment, the deformable material is a sponge material (e.g., open cell sponge or closed cell sponge). Other suitable materials include, but are not limited to, plastic (foamed or non-foamed polymers,

synthetic rubber etc.) or any other material capable of being compressed and expanding thereafter.

[0023] Protrusion 120, in another embodiment is formed of plastic. Other materials suitable for forming protrusion 120 include, but are not limited to, paper, cardstock or cardboard.

[0024] In one embodiment, protrusion 120 is formed of the same material as base 110. Representatively, base 110 and protrusion 120 are formed in a single mold to form apparatus 100. In another embodiment, base 110 and protrusion 120 are formed in separate molds or as otherwise separate structures and connected together using an adhesion material. In another embodiment, a heat process is used to melt base 110 to protrusion 120.

[0025] Base 110 and protrusion 120, in one embodiment, are formed of different materials. For example, base 110 may be formed of cardboard while protrusion 120 is formed of plastic. Other embodiments include any combination of the materials discussed above for base 110 and protrusion 120.

[0026] In addition, apparatus 100 may be any color or combination of colors. In one embodiment, apparatus 100 is a single color. In another embodiment, apparatus 100 is multi-colored. In another embodiment, base 110 is a different color than protrusion 120.

[0027] It is contemplated that protrusion 120 may be oriented any where on base 110. For example, as shown, protrusion 120 is oriented toward one side of base 110, however, protrusion 120 may be oriented in the middle of base 110 or any other place on base 110, including, but not limited to, a top side, a bottom side and a perimeter side extending laterally as represented by T in **Figure 2**.

[0028] Apparatus 100, in one embodiment, includes aperture 130. In **Figure 1**, aperture 130 is formed in base 110. Representatively, aperture 130 is of a size capable of having an attachment member (e.g., a key chain) placed through aperture 130. **Figure 3** shows a bottom view of apparatus 100, including aperture 130. Aperture 130, in the embodiment shown in **Figure 3**, is circular and suitable for attaching apparatus 100 to another object (e.g., a key

ring). Representatively, aperture 130 may be circular with a diameter of about one tenth inch. In other embodiments, aperture 130 has a diameter of about one sixteenth inch to about 1.75 inches. Aperture 130, in other embodiments, may be any shape, for example, rectangular, including square, triangular, oval, etc., and may be any size suitable to attach to another object, but while still being within the confines of apparatus 100.

[0029] **Figure 4** shows apparatus 100 placed on a lid of a beverage container, for example, for ease in stacking the lid during storage and/or shipping. In the embodiment shown in **Figure 4**, recessed area 140 at one end of base 110 is shaped to mirror the shape of a rim of the lid with which apparatus 100 is attached. In another embodiment, apparatus 100 may be oriented in the opposite direction such that base 110 would essentially extend over the lid of the beverage container rather than extending beyond an edge of the beverage container as shown.

[0030] As shown in **Figure 4**, base 110 extends beyond the lip of the lid. Positioned in this manner allows a person to grab base 110 and pull upward for removal of protrusion 120 (not shown) from a consuming opening in the lid during use. Also, this embodiment of apparatus 100, as a cantilevered structure, allows a person to grip base 110 for replacing protrusion 120 into the consuming opening (e.g., gripping with two fingers at a point on base 110 (perhaps opposite sides) adjacent to or at an end opposite protrusion 120).

[0031] By filling the consuming opening of the lid of a beverage container, embodiments of apparatus 100 are capable of blocking (e.g., sealing) the opening such that liquid contained within the container does not spill out of the container through the consuming opening or any spillage is minimized. In addition, by filling the opening in the lid, embodiments of apparatus 100 aid in keeping a hot beverage hot by preventing heat from escaping through the opening in the lid.

[0032] **Figure 5** shows a plurality of lids capable of being stacked on each other and each including another embodiment of apparatus 500. Lids 510, 520 and 530 each have a conical shape with apex 535 (as viewed) having a diameter less than a diameter of base 540 of the lid. In one embodiment, base

540 fits over the lip of a beverage container and seals the lid to the container. Base 540 defines an opening into the lid. Apex 535 of each lid is defined by a superior surface. The superior surface has a cavity extending into one or more quadrants defining conical, circumferential body 550 of the lid having the consuming opening formed therein (not shown). Body 550 has front lip 554 extending toward base portion 540 of the lid defining an external perimeter plane 558 of the lid. Also, body 550 has rear lip 564 extending toward base portion 540 of the lid defining interior plane 568 of the lid.

[0033] As shown in **Figure 5**, this embodiment of apparatus 500 (three shown) includes an angled base 510. Base 510, in the embodiment shown, is angled such that base portion 512 is angled to conform to the conical shape defined by the different diameter of apex 535 and base 540 (plane 558) of front lip 554 of body 550 of beverage container lids 510, 520 and 530 to allow for stacking of lids 510, 520 and 530 while protrusion 520 is blocking (plugging) the consuming opening of lids 510, 520 and 530. In addition, base portion 512 may form any angle which would allow other lid to be stack upon a lid containing apparatus 500. The embodiment shown in **Figure 5** and similar embodiments may either be disposable or reusable and may be formed of any of the materials discussed above.

[0034] In addition, **Figure 5** shows base portion 514 of base 510. Base 514, in one embodiment, is angled to conform to the conical shape defined by the different diameter of apex 535 and base 540 (plane 568) of rear lip 564 of body 550 of the beverage container lid to assist in keeping apparatus 500 in place while engaged with a consuming opening of the lid. It is contemplated that base portion 514 may form any angle with respect to rear lip 564, even if base portion 514 functions in a non-securing manner.

[0035] In one embodiment, apparatus 500 only includes base portion 512. In another embodiment, apparatus 500 only includes base portion 514. It is contemplated that apparatus 500 may contain neither base portion 512 or base portion 514 but only protrusion 520 mounted on base 510 of such a size to lie directly over body 550 of the lid without any portion of base 510 protruding over the raised edge of the lid. In addition, base portions 512 and 514, in some embodiments, may not be angled, but instead extend parallel and/or



perpendicular (e.g., similar to the plane of a straw protruding from the consuming opening) to apex plane 538 of the lid.

**[0036]**        **Figure 6** shows apparatus 100 connected to a key chain. Once a key chain or key chain is inserted through aperture 130, apparatus 100 is capable of being transported. In addition, apparatus 100, in one embodiment, is durable and capable of being used a plurality of times. Moreover, it is contemplated that any material and/or device may be inserted through aperture 130 for transport of apparatus 100. Also, in one embodiment, aperture 130 is of a sufficient size and shape that apparatus 100 may be directly connected to another object for transportation.

**[0037]**        **Figure 7** shows another embodiment of a plug attached to a key chain. This embodiment includes ring 720 with which apparatus 700 may be attached to another object. In **Figure 7**, ring 720 is connected to a clasp of a key chain for easy removal from the key chain. In addition, it is contemplated that any method suitable for connecting apparatus 700 to another object may be used. For example, base 710 may form a clasp shape or any shape that may be clasped by a clasping or attaching mechanism.

**[0038]**        In the foregoing specification, the invention has been described with reference to specific embodiments thereof. It will, however, be evident that various modifications and changes can be made thereto without departing from the broader spirit and scope of embodiments of the invention as set forth in the appended claims. The specification and drawings are, accordingly, to be regarded in an illustrative rather than a restrictive sense.